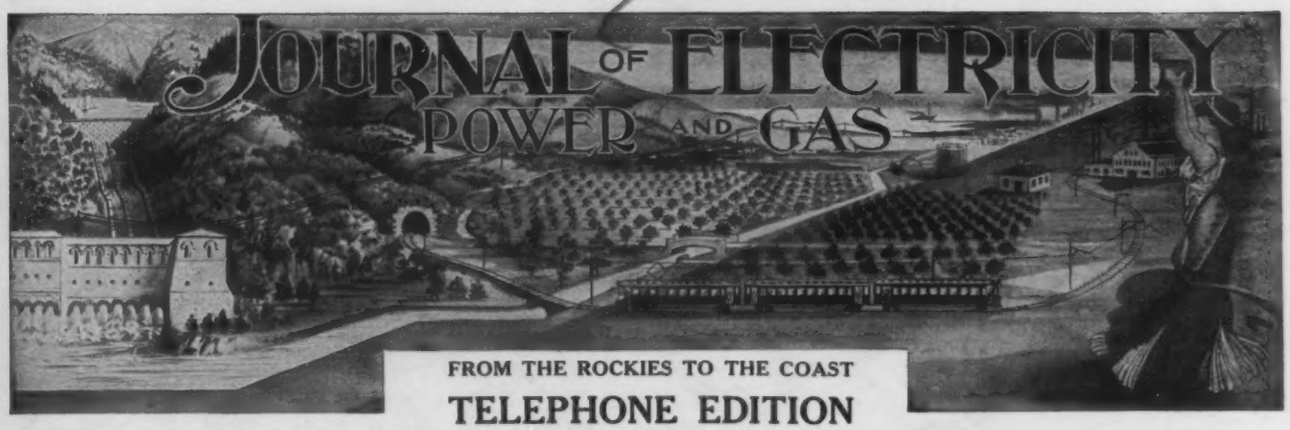


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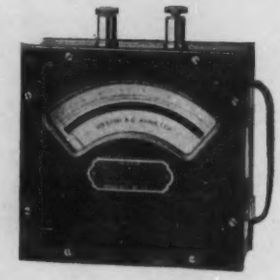

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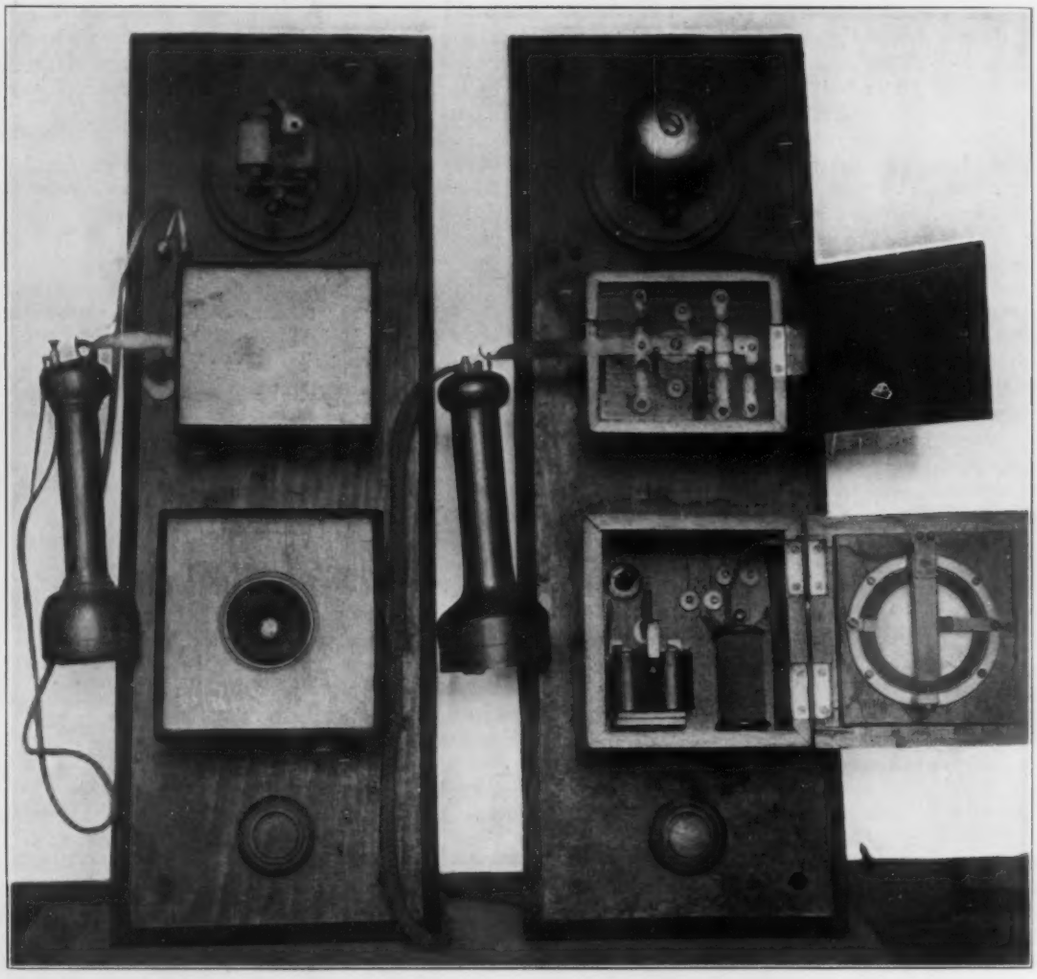
VOLUME XXI. SAN FRANCISCO, CAL., AUGUST 8, 1908 No. 6

## FIRST AMATEUR TELEPHONE ON THE COAST.

As an interesting relic of the development of the telephone on the Pacific Coast is illustrated one of the first amateur telephone sets constructed in the West. The two instruments were made by Mr. George J. Harvey, in 1883, at Yuba City, California. The town then had but three hundred inhabitants, and the facilities for manufacturing telephones were most meager. As a consequence, great ingenuity and patience was necessary on the part of the experimenter.



AMATEUR TELEPHONE MADE IN CALIFORNIA TWENTY-FIVE YEARS AGO.

The transmitters were modeled after the single-contact microphone type devised by Francis Blake, and every piece was made by Mr. Harvey. An old sewing machine furnished most of the wood for the cases. The diaphragm was cut from a piece of tin plate. The damping springs were made from clock springs, and the supporting lugs were of zinc cast in a plaster of Paris mold. The carbon electrode was cut from an electric light carbon. The adjusting screw had formerly served to move the wick of an oil lamp. The transmitters are still in good condition and articulate well.

One of the receivers was turned from a piece of locust, and the other from a piece of walnut. They are of the single-pole type, of Norway iron, and supported by a screw-eye from the hook-switch. The switch mechanism, as can be seen in the picture of the open instrument, was operated by the weight of the receiver. All screws and springs were hand-made by Mr. Harvey.

The push-button for calling is of wood, as shown in the lower part of the picture. The bell was rung by a relay placed in the box back of the transmitter. All the magnets were wound on pieces of scrap iron that happened to be available. The bell tops alone were purchased.

The instruments were operated on a local battery system. A small silver-chloride cell placed at each telephone was used for both calling and transmitting. In order to prevent tampering a hook lock was operated by a screw on the side of the instrument and resembling one of the construction screws. As Mr. Harvey has since devoted his attention to other lines of work, now being chemist for the Viavi Co., these instruments have long been forgotten until resurrected to illustrate this article.

## WIRING OF BUILDINGS FOR TELEPHONE SERVICE.*

It is accepted good practice to wire new buildings for electric light service. To do so is as usual as to pipe for gas. Safety, sightliness, and freedom from service interruptions require that carefully prepared plans be followed in installing the wiring for electric lighting, and architects regularly include such plans in the scope of their work. For the same reasons provision should also be made in advance for telephone service. To make such provision after a building has been completed always is unsatisfactory and always is more expensive than to do it at the outset. Provision is made for the service of two telephone companies. The additional cost of providing for two companies instead of one is very small, if the suggestions in these notes are followed. The dimensions of terminal and distributing cabinets and boxes, apparatus rooms, shafts, conduits, etc., which are recommended, are based on the sizes and requirements of apparatus now in general use by telephone companies.

There are three classes of buildings which require particular attention in preparing for telephone service, viz., office buildings, hotels and apartment houses. Other buildings which require consideration are flats and private dwellings.

### Office Buildings.

It is apparent that the exact location and number of telephones in office builidngs can not be determined positively in advance of their installation; nor when a telephone is once located, can the location be considered permanent. It is sufficient, however, to assume that there will be required about one telephone per office. While the number of telephones so figured often is exceeded, that number of lines generally proves sufficient, because the excess stations are taken care of by private exchanges having fewer lines to the central office than to local substations. Since the location of telephones cannot be determined in advance it is necessary that a very flexible arrangement be provided and one that will permit wires to be run to *any* part of *every* room. Such an arrangement in nearly all cases can be obtained best by the use of raceway mouldings in halls, picture mouldings in rooms and by the proper distribution of hall terminal boxes. These hall terminal boxes are to be served by riser cables and provision made so that the riser cables may be carried vertically from the basement to the top floor. The extensive use of conduit in office buildings for the distribution of telephone circuits is very costly, inflexible, and is not recommended as the best practice.

Common and good forms of raceway mouldings are shown in Figure 1. A larger moulding is required in the hall than in the individual rooms. The moulding in each room should be connected with the hall moulding by a short piece of ¾-inch conduit. This will make any subsequent boring of the walls unnecessary.

Mouldings in adjacent offices also should be similarly connected. In this case, the conduits should be placed in the dividing wall, as close to the hall as possible. This interconnection of room mouldings will be found particularly useful in wiring a suite of offices for a private exchange, with a switchboard in some one room.

The mouldings should be continuous along the entire length of a hall and around the walls of a room and preferably should be above all doors and window sashes, or, at the lowest, on a level with their tops.

Where terminal boxes are not placed on both sides of the hall, the moulding on each side should be connected by two 1½-inch conduits (one for each company), placed in the ceiling, as shown in Figure 2.

Where very long halls exist, even with terminal boxes on both sides, connecting conduits 1½ inches in diameter, and in duplicate, should be placed at intervals not exceeding 100 feet. The total length of a hall should be considered as that measured throughout its entire length on all sides of a building.

*Abstract of bulletin published by the Home Telephone Co., of San Francisco

In placing conduit under these conditions and elsewhere, the usual precautions should be taken to round the exposed edges at the ends so as to remove all burrs which might injure the insulation of the wires or the covering of the cables.

It is distinctly desirable to use but one size of hall terminal box throughout a building. This can be done with ease, if the following simple rule is adhered to: *Always place enough boxes on each floor so that not more than ten to thirteen offices will be served from one box.*

A good form of hall terminal box suitable for the above arrangement and one which will accommodate wires of two competing companies, is shown in Figure 3.

The boxes are inexpensive in design and should be placed just below the hall moulding, the back of the box projecting up behind the moulding to afford a means of connection between the moulding and the box.

In placing the boxes along a hall, an effort should be made to place the box as close as possible to the center of the group of offices which are to be served by the box.

In order to connect the terminal strips in the hall terminal boxes with the riser cable, the cable shaft or closet accommodating the riser cable, should itself be connected with the hall terminal box, either indirectly by means of the hall moulding or by a special conduit-run, or directly by placing the hall terminal box in the shaft close to the hall moulding.

Hall terminal boxes should be located with reference to the offices they are to serve, and if a choice exists, the location of the riser cable shafts should be made with reference to the location of the hall terminal boxes and so as to reduce the length of distributing cable from the riser shaft to the hall distributing boxes to a minimum.

In all except the smallest buildings (four to five offices on the longest side) at least two cable riser shafts should be provided for, at diagonally opposite corners of the building.

Shafts enough should be provided to keep the distance from the shaft to the farthest terminal box under seventy-five feet.

In deciding upon the type of shaft to be used, it should be remembered that enclosed shafts are distinctly preferable to open shafts. Elevator ways and vents are open shafts. Cables in open shafts, even though covered, are unsightly and in danger of injury.

Separate shafts of small dimensions are strongly recommended for telephone purposes. These shafts can be usually located in some part of the hall walls so as to be nearly midway between the hall terminal boxes they serve. Such a shaft is shown in Figure 4. In this particular case it is shown in the hall wall opposite a partition between offices. In many cases such a shaft can be recessed into a wall of the janitor's closet, elevator shaft, toilet room or other space, so as to be inconspicuous. The shaft should have an inside dimension of *at least* six by twelve inches. It may well be somewhat larger. The long dimension preferably should be parallel with the hall; this position of the shaft may be reversed if necessary. The shaft shown is provided with a removable paneled cover on each floor, extending from the wainscoting to the ceiling but cut at the hall moulding. If the location of the shaft permits, one of the hall terminal boxes (Figure 3) may be placed in the shaft directly below the moulding.

As riser cables generally are not self-supporting, means must be provided to permit the cables to be strapped to the walls of the shaft. This may be arranged, in most cases, by sinking flush with the walls of the shaft near the top and bottom of the opening on each floor 2-inch by 4-inch wooden sleepers. Where tile walls are used, the sleepers may be omitted, as toggle bolts can be used to advantage on walls so constructed.

Where cable shafts are well placed with regard to the location of the hall terminal boxes, it is not generally possible to extend all of them to the basement, as the arrangement of the first floor is generally different from that of the rest of the floors. This condition easily may be taken care of by extending to the basement from the bottom of each cable shaft two

3½-inch conduits, unless smaller conduits are permissible, as referred to later herein.

The shaft above described is sufficient to care for 400 circuits of each of two companies, and only in very rare cases will a larger shaft be required. It is better to install additional cable shafts of the size already given, than to increase the size of the single shaft so as to accommodate more than 400 circuits of each company. In emergencies, 600 pair cables can be obtained, but cables so large should be considered special.

Where it is not possible to construct separate shafts for telephone purposes, other shafts, such as elevator shafts, pipe shafts and vents, *may be* used, providing they are within a reasonable distance of the hall terminal boxes. They are distinctly not the best way, however. The following paragraphs are suggestive of the proper equipment of these shafts when they must be used for telephone purposes.

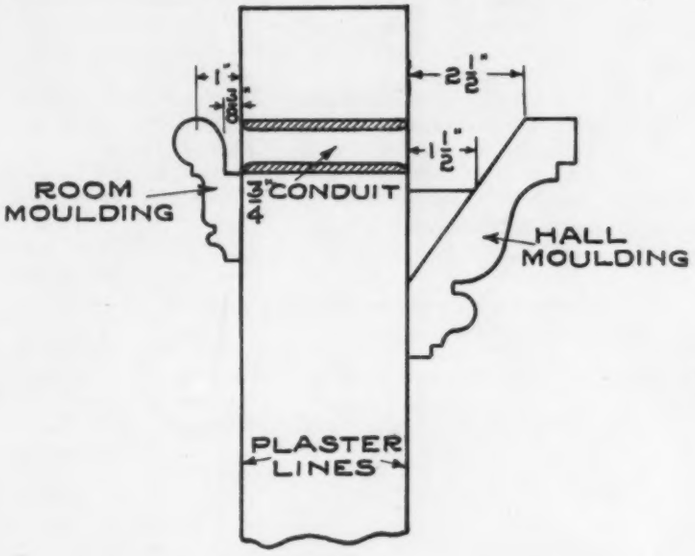



FIG. 1
SHOWING HALL AND ROOM MOULDINGS AND PARTITION CONDUIT

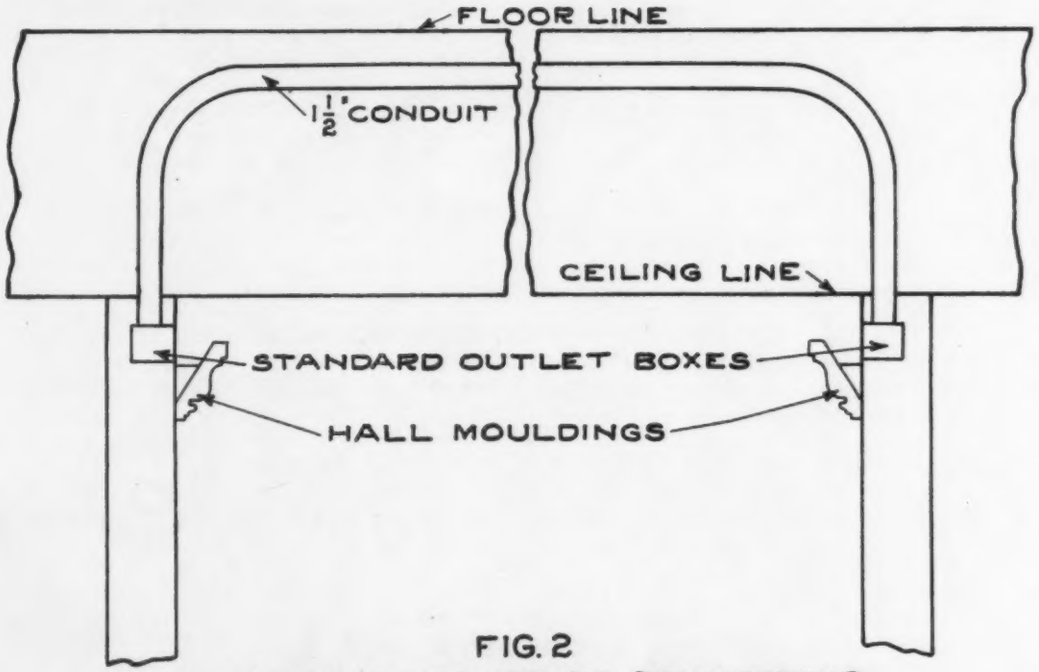



FIG. 2
SHOWING METHOD OF CONNECTING OPPOSITE HALL MOULDINGS BY CONDUIT

When an elevator shaft is to be used, provision should be made at each floor so that the distributing cables may be run from the riser cable to the hall distributing boxes. This may be accomplished either by running the hall moulding to the shaft or by connecting the shaft to the hall moulding with a conduit run.

Where possible, the riser cable should be enclosed, both for appearance and for protection. This may be easily arranged for by constructing a small box with removable covers or doors and extending it vertically from the basement to the top floor. This box should have an internal cross-section approximately 6x12 inches, the same as previously specified for a separate shaft.

Where a combined pipe-and-wire shaft is to be used, an effort should be made to separate the telephone wire portion set aside from the rest by a substantial partition, preferably fireproof. Telephone cables and wires may not be kept close to steam pipes. Provision should be made so that access may be had to the cable at each floor. The shaft should be properly

The main terminal, except for special reasons, always should be located in the basement, and the location should be dry and not too close to steam pipes and the like, but convenient to vertical cable riser shafts and to the point or points at which the service cables from the telephone companies will enter the building. These latter locations can be learned easily from the telephone companies.

If the vertical riser cable shafts do not terminate at the main distributing terminal they should be connected to the latter by 3½-inch conduits, two conduits being run to each shaft. Should it be evident that a shaft will never have to accommodate a full cable of 400 pairs of wires of each or either of the telephone companies, smaller conduits of the size indicated later herein may be used.

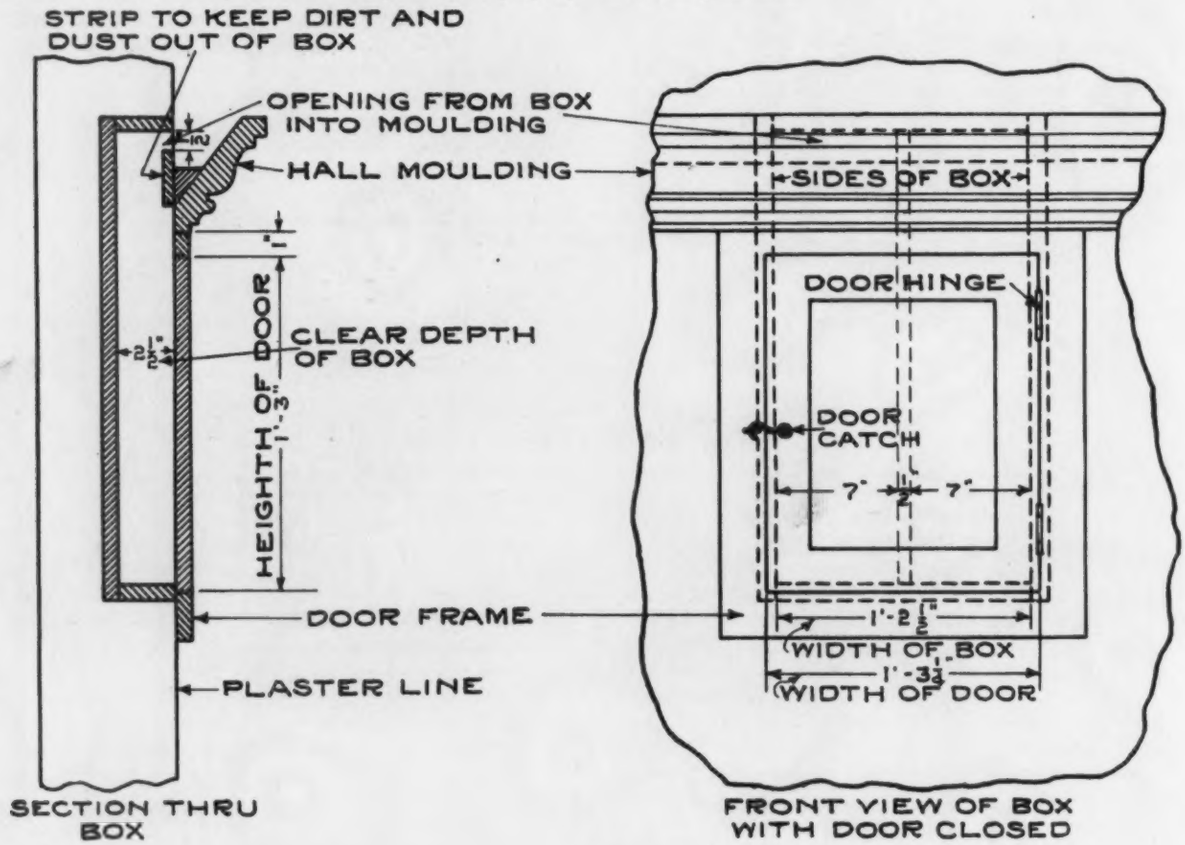



FIG. 3

HALL DISTRIBUTING BOX
CAPACITY 30 LINES

connected with the hall moulding or to the distributing boxes. A separate door for each part of the shaft is not necessary. A partition separating telephone cables from the other cables and pipes in the shaft is all that is required.

Where vent shafts exist in suitable locations, they should be treated in practically the same manner as elevator shafts. The cable should be accessible at each floor. As lead-covered cables are used in riser shafts, it is not necessary that the vent shaft should be waterproof. Care should be taken, however, that the connection to the hall moulding is waterproof on the hall side. Where conduit is used, this result may be obtained by slanting the conduit up from the outside.

In all these shafts provision should be made where necessary at each floor so that the cable may be secured in place as previously described.

In order that wires within the building may be connected to the outside wires coming from the central office, it is necessary that both sets of wires be carried to some common distributing point. The place at which this occurs is either a main terminal cabinet or main terminal room.

Two conduits always should be run to each shaft, as separate cables of the two companies can not be placed in one conduit. If this were done, it would be impossible to replace one of the cables without removing all.

In large office buildings requiring 300 or more pairs of wires of each company in the riser cable shafts, and in smaller buildings, if possible, it is very desirable to set aside a small room for the accommodation of the main telephone terminals. Doors to such a room should swing outward. The dimensions of the room should be *at least* as follows: Such a room will accommodate the terminals of two companies.

| *Number of pairs of wires of each company in riser cables.* | *Size of room.* |
|---|---|
| 400 or less | 7 ft. x 8 ft. 6 in. |
| 600 | 7 ft. x 11 ft. |
| 800 | 7 ft. x 13 ft. |

While it is preferable not to combine the telephone room with the terminal room for electric power and light fuse cutouts, is sometimes necessary. Where necessary, the space allowed for telephone purposes in the combination room should

at least be equal to that given in the preceding paragraphs. All rooms should have a clear height of at least eight feet.

Where space in a room cannot be allotted to the main terminals a cabinet with swinging or sliding or removable doors should be furnished. This cabinet may be located in a hallway or against a wall, and as it is shallow, it generally can be arranged for without trouble, even where space is limited.

The cabinet should be one foot in depth and approximately seven feet high. Its length will depend upon the required capacity and may be obtained from the following table. A cabinet of the size given will accommodate the wires of two companies. Should one cabinet of the length specified be impracticable, it is suggested that two cabinets be installed, each half the length specified, *plus eight inches.*

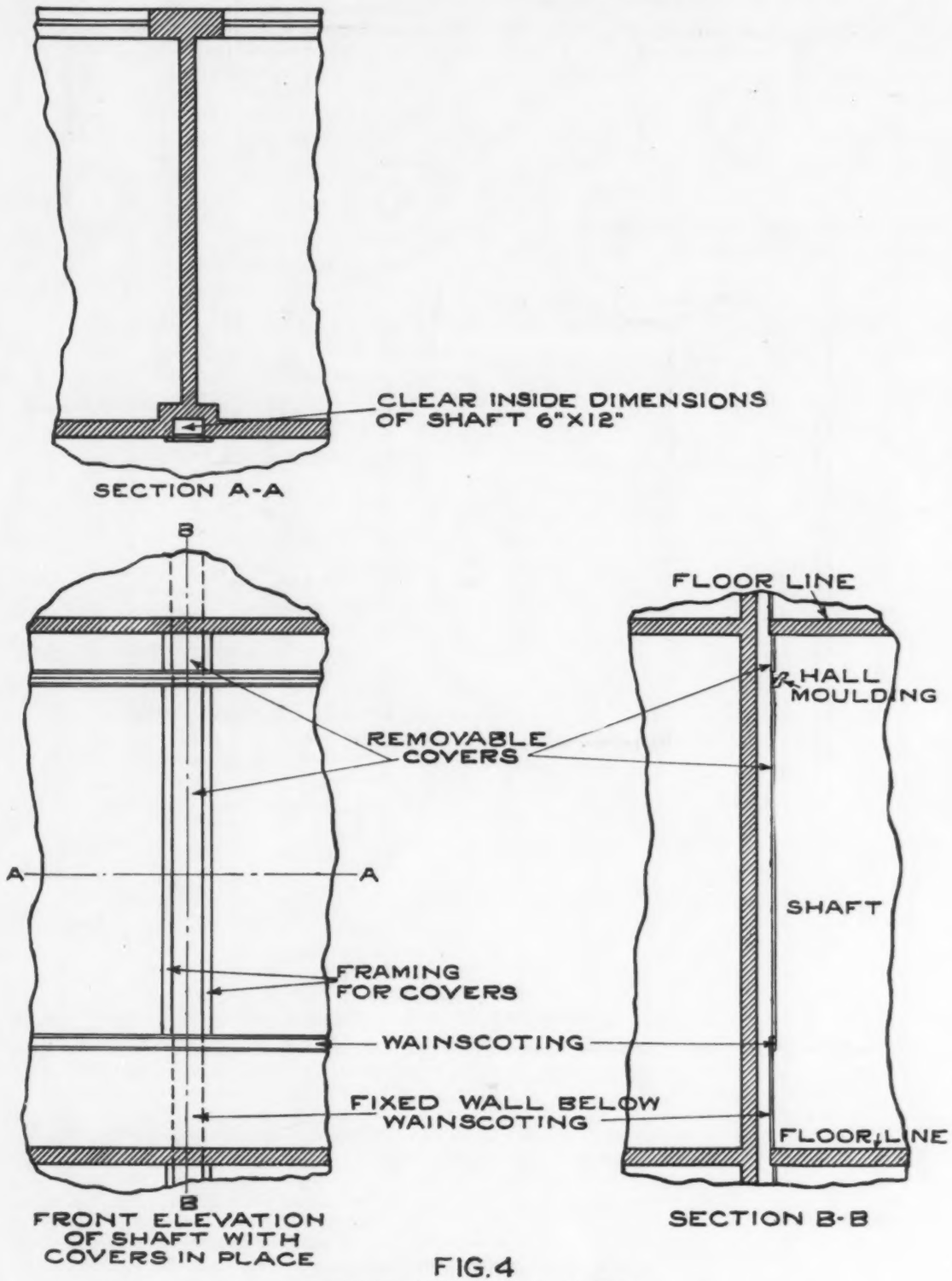



FIG. 4
RISER CABLE SHAFT

| *Number of pairs of wires of each company in riser cables.* | *Length of cabinet.* |
|---|---|
| 200 pairs or less | 5 ft. |
| 200 to 400 pairs | 8 ft. 8 in. |
| 400 to 600 pairs | 13 ft. |
| More than 600 pairs | 16 ft. 4 in. |

Where the basement is unfinished and the location of the main terminal is close to the point at which the service cables enter the building, no special provision need be made for conveying the service cables to the main terminals. Where the basement is finished, or where the main terminal is located at a considerable distance from the point at which the service cables enter, conduit should be run from this latter point to the main distributing terminal.

The size of the incoming cables can be approximately determined by allowing as before stated, one pair of wires for each office. The size of conduits required to accommodate such cables may be obtained from a table given in the latter part of this bulletin. Separate conduits always should be run for each company.

Two standard Edison plug outlets should always be arranged for in the vicinity of the main distributing terminal. One is for a portable lamp and the other for an electric soldering iron.

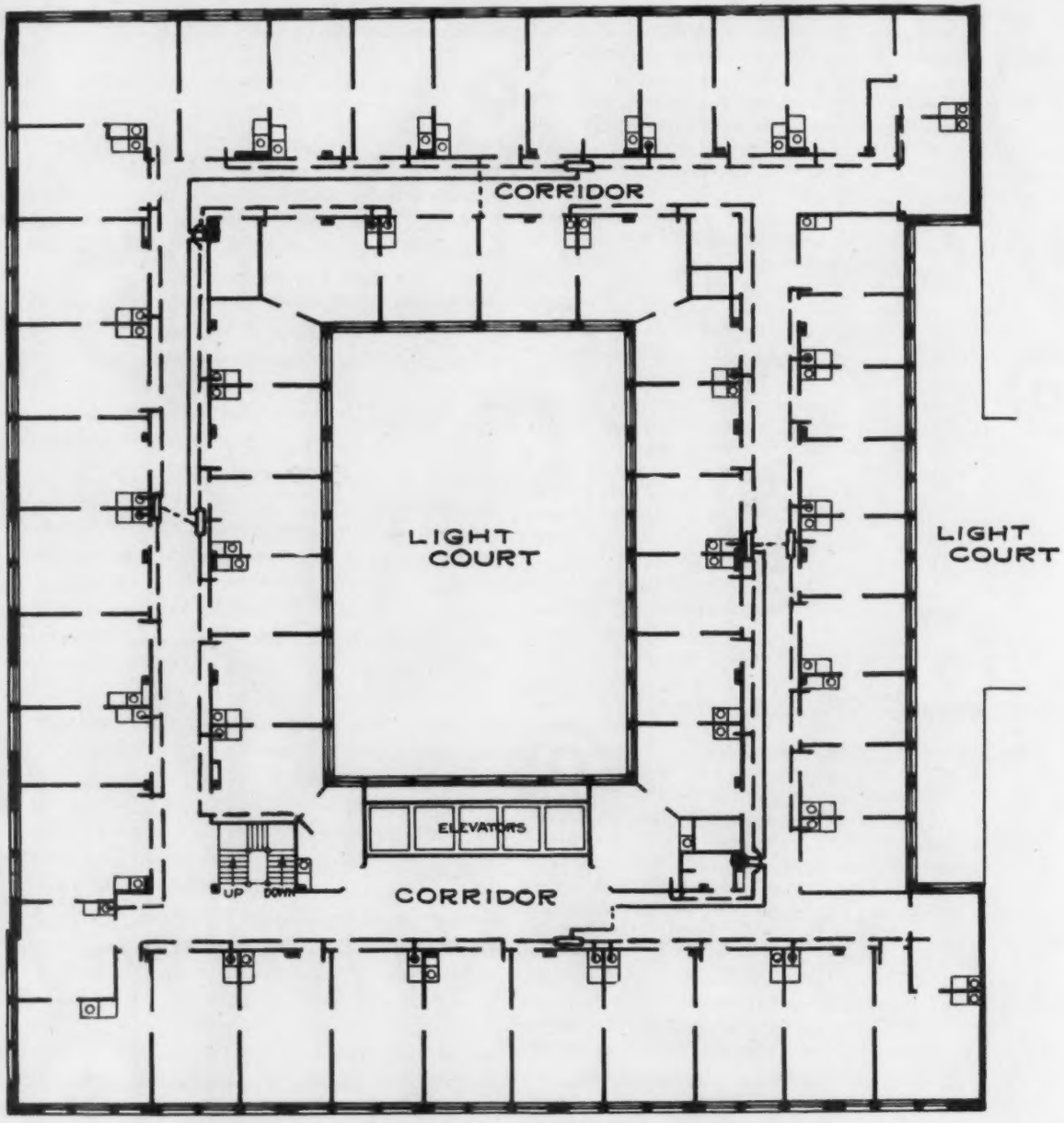



FIG. 5

OFFICE BUILDING

Figure 5 illustrates a typical office building wired in accordance with these suggestions. Two small riser shafts are shown at diagonally opposite corners of the building. The distribution of the hall terminal boxes is such that no one box serves more than eleven offices. With the arrangement of riser shafts and hall terminal boxes shown, the length of the distributing cable and service wires to each office is reduced to a minimum.

(To be continued.)

## CALIFORNIA INDEPENDENT TELEPHONE ASSOCIATION.

About thirty members of the California Independent Telephone Association attended the regular quarterly meeting at Whittier, Cal., Saturday, July 11th. The delegates arrived at 3 o'clock in the afternoon, when they were shown through the State Pathological Institution and had the mysteries unfolded to them of budding, grafting, curing, tomato blight, and kindred important matters, and as they invaded the experimental gardens and beheld the excellent work in the propagation of walnuts, lemons, oranges, and various forms of fruit and plant life, some of the delegates were heard to ask if you could graft oranges on a telephone pole successfully.

From the Pathological Institution the members were taken to the National Electrical Works. Here Mr. Sohm, the inventor, and his assistants explained many of their new and interesting devices. Among them was the miniature production of a fire alarm system along with a new hotel annunciator or "incitophone," as it is called. In a new telephone switchboard, telephone jacks, telephone cord reel and many other changes have been included. The incoming calls are registered in front of the operator on a dial or rotating wheel, but one number showing at a time. Should half a dozen subscribers call the operator but a fraction of a second apart, each number is registered in its proper turn as fast as the operator is able to take the calls, thus preventing discrimination in any way.

After the inspection of the works the delegates were taken to the Hotel Greenleaf where a business session of the organization was held and many important matters were thoroughly discussed. The social feature of the day was the customary banquet at 7 o'clock in the evening, after which the delegates were invited to hold their next convention at Long Beach in September as the guests of the Vita Manufacturing Company. The invitation was accepted. Mr. Morphy of Los Angeles made a humorous and telling talk for a few minutes, after which Mr. Powell of San Fernando read a paper on "Standardizing of Bookkeeping." "How Can We Improve the Service?" was another topic which caused much comment. Mr. A. Wardman of the Whittier Exchange took occasion to remark during this discussion that the dissatisfaction on the exchange in some cases is caused by the neglect on the part of the manager in seeing that the operators tend to their duties and in not following up the complaint of the subscriber to the original cause. On the other hand, it is absolutely necessary to protect operators from unreasonable abuse and complaints, as it is not human nature for a person to be abused by one subscriber and be pleasant to the next one. Therefore, all operators have instructions that when anyone has anything to say beyond the regular order of business, to refuse to listen, turning the subscriber over to the chief operator. We find in this method that some of the most unreasonable subscribers gradually become pleasant, and this creates harmony and pleasant feeling between the operators, manager and the public.

## PUBLIC USE OF DRUG STORE TELEPHONES.

In a suit brought by a Seattle druggist named L. F. Swift, to restrain the Independent Telephone Company from taking a telephone instrument out of his store because it was used by his customers, the company showed that there was an average of 179¼ calls per day from the telephon in question, while the average on other telephones was only 9 2/10 calls per day. A temporary restraining order was issued, and on July 17 Judge Griffin heard the case and rendered a decision upholding the contention of the telephone company. The court found that the telephone company is justified in requiring that telephones, installed in drug stores and other places for public use, be used and operated on the nickel-in-slot plan and to charge five cents for each call. The decision states that the telephone company would illegally discriminate against other subscribers if it allowed its telephones to be used free of charge by the general public.

## STANDARDIZING BOOKKEEPING.*

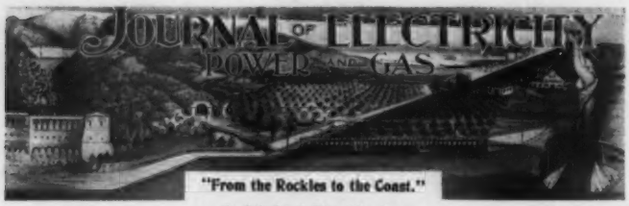
One of the first and greatest essentials of any business is a correct, simple, but comprehensive form of bookkeeping. Nothing is more annoying to the manager, or creates a greater lack of confidence on the part of the patrons, than to find that the accounts are not correctly kept; and their patience is soon exhausted if your bookkeeper has to take a piece of paper and add this amount and subtract that, and finally say that if everything is posted your account is so much. Again, the only true and accurate system of bookkeeping is one that checks itself, which a double entry system always does. We are, therefore, in favor of using a double entry system.

Another great essential of good bookkeeping is the trial balance. There are a number of lines of business in which bookkeepers claim it is not possible to take off a trial balance. For instance, in the fruit business, where part of the entries represent so many boxes of fruit without a money value. It would appear impossible to debit and credit the different accounts so as to admit of a trial balance; but as I am secretary of a fruit association and have during the past year taken off a trial balance every thirty days, I know it can be done. I also know that your auditing committee feel that there is not much for them to do and that they feel perfectly safe in vouching for your accounts when you show them a trial balance. The matter is very simple. You charge a fruit account with each box of fruit that comes in and credit it to a grower. One thing is necessary: Your books must be kept posted so that you can take off a trial balance at any time. If the bookkeeper has not been accurate the trial balance will detect the mistake.

The first account for us to consider is the cash account. In keeping the cash account pay out by check only. If necessary to pay out small amounts, keep five, ten or twenty-five dollars in petty cash account. Be careful to always put your check number in your cash account. This saves time in checking at the end of the month and helps when looking up an account. Post all the items on the credit side of your cash book direct to your various accounts to eliminate journalizing. Your cash account should be balanced daily if you have many items, and always checked with your bank book whenever that is balanced by the bank. In showing your daily balance, it is a good idea to say, bank so much, till so much. If you do not take off a daily balance the petty cash is very essential. The oftener you balance cash the less trouble you will have, as the cash account needs careful watching in a small as well as in a large business.

A journal is only necessary for charging up repairs, removals, installation, etc., or these items can be posted direct from a blotter or day book, but it is a safer plan to journalize so as to get the items in two accounts, one of which will show you at a glance what the outside work has brought in for the month or year as your other account will show you what it has cost you to do the work. A few years ago a day book, journal, ledger and cash book were of about one form, but today we have our cash books ruled with columns for segregating our accounts. Our loose leaf ledgers save us a great deal of time in transferring accounts, and we have the carbon copy, which is another time saver, not to mention the card system.

*Extract from paper by Mr. F. A. Powell at the meeting of the California Independent Telephone Association.

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Regarding the editorial on "Possibilities and Probabilities," in our issue of July 11, 1908, it should be stated that the warning to laymen referred only to spurious wireless telephone companies, and implied no discredit on the automatic telephone system.

# EDITORIAL.

**TACT IN TELEPHONY.**

We are told that if Reis had given one more turn to the screw holding the diaphragm in his telephone transmitter he would have had the continuous contact necessary to transmit speech. Seventeen years later Bell tightened the screw and found the secret. Descending to the vernacular, "the loose screw" that has marred many a man is lack of tact. This quality, however, is the very one in which the telephone man is pre-eminent. Continuous contact with critical customers has developed the "touch faculty" in every employee from the lineman to the president.

Originally referring only to the physical sense, the meaning of tact has gradually become restricted to the exercise of the sense of touch with reference to human character. It lubricates any irritating conflict of opinions and makes smooth the course of business. Concretely, it is skill in dealing with men, or, more specifically, it is courtesy combined with justice.

Courtesy is the necessary characteristic of everyone connected with a telephone company. In the man who takes the order, in the wireman, in the installer, in "Central" (if the manual be used), and in the collector, it is even more important than in the general manager, for they are the representatives who meet the subscribers most frequently. Such courtesy, like a muscle, is strengthened by use.

Justice includes both honesty and impartiality. The goodwill and friendship of the subscriber is as essential to the success of a telephone company as it is to that of a newspaper. They are inspired and retained only by a policy of absolute fairness, whether in making rates or in rectifying complaints. In making a complaint, the consumer is really asking for a continuance of service, and every endeavor should be directed to correct it. After this has been done, a letter asking if the service is satisfactory in every detail, will cause him to write a reply, and therefore make him hesitate before using "the poor telephone service" as a common topic of conversation.

It is due largely to this policy of tact that a former scientific toy has become one of the greatest necessities of modern civilization. Today there are over seven million telephone stations, representing an investment of at least seven hundred and fifty million dollars. Today the telephone bell is heard oftener than the postman's ring, and the number of telephone calls per thousand people is fast approaching the combined number of letters, postcards and newspapers delivered by the mail. Its indispensability will become even greater if the corresponding essential of tact is kept carefully in mind. A telephone man without tact is like a telephone transmitter that is packed; neither is sufficiently sensible to external impressions; both need to be shaken up.

## BOOKS RECEIVED.

That the methods of electrical contracting are included in the category of "tricks to all trades" is indicated in an excellent book on "Electrical Contracting" by Louis J. Auerbacher. Not that this book is devoted to the tricks, for it contains one of the best directions for the wireman and contractor that have yet been printed. It not only contains many practical hints on the latest construction methods, but also valuable suggestions of means for increasing business. The book begins logically with forms and instructions for a shop system which gives means for detecting financial leaks. The problem of estimating is treated as simply one of analysis. Diagrams and examples of wiring systems precede an extended treatment of exposed wiring, wiring with wooden moldings, and various kinds of conduit. Particular stress is laid on the possibilities of residence wiring in adding to the income of the contractor and to the comfort of the inmates. One chapter is devoted to motor installations and another to generators. The section on signals and telephones is rather brief but can be supplemented by examples of actual practice. The concluding chapter on special devices is little more than a catalogue of various manufactured articles. Yet on the whole, even the experienced contractor will find valuable suggestions in this volume, and to the novice, but not the amateur, it should prove invaluable. The price is $2.00, as published by the McGraw Publishing Co. of New York City.

"Telephone Law," by A. H. McMillan, has been written for the use of persons engaged in the telephone business. It is not an exhaustive treatise for a lawyer's reference, but a compact and concise arrangement of legal information. It first takes up the details of organizing a telephone company, commencing with the incorporation and giving an extended discussion of the advantages of domestic and of foreign incorporation. It proceeds with an account of all the requisites of company formation. Following is a resume of methods of getting and holding franchises, including a chapter devoted to rates, rentals and charges. Seven chapters are filled with the various phases of the questions of rights-of-way, both public and private. The chapter on financing plans and securities is especially valuable in its suggestions as to obtaining the most capital with the greatest safety and economy. The concluding chapters are devoted to taxation, question of damages, contracts, insurance and house moving. An appendix of forms is also included. The book contains 330 pages and is well printed and bound. This volume should be in the library of every telephone man. It is published by the McGraw Publishing Company of New York City for $3.00.

As an auxiliary to the excellent courses of instruction offered by the American School of Correspondence, of Chicago, this concern publishes various text books embodying the essentials of the sciences taught. The latest of these is "Dynamo-Electric Machinery," by Francis B. Crocker, whose high standing as head of the Department of Electrical Engineering, Columbia University, as well as past president of the American Institute of Electrical Engineers, vouches for the excellence of this treatise. Special stress has been laid on the practical side of the subject, and care has been taken to avoid abstruse technical terms and formulae of higher mathematics.

Beginning with the fundamental principles of generators the student is guided through the elementary principles of electricity to a knowledge of the various classes of working machines. Appropriate illustrations, including many graphical diagrams, supplement the text. A large section is devoted to calculations and characteristic curves of continuous-current generators, the explanation of the different types of armature windings being particularly good. The concluding part of the volume considers the various parts of direct-current generators from a constructive point of view. Alternating-current machines are not treated in this volume. For the purposes of self-instruction as well as of reference the book is excellent, a good index facilitating the latter. It contains 235 pages, 6½x9, and is well bound in red cloth. The price is $1.50, and the publishers the American School of Correspondence, Chicago, Ill.

## PERSONAL.

R. J. Davis has returned from a week's sojourn in the high Sierras.

John R. Cole is attending the Bohemian jinks on the Russian River.

C. C. Hillis, general manager of the Electric Appliance Co., has returned to San Francisco after an extended trip East.

W. A. Blair, of the Western Electric Co., has been elected vice-president and a member of the Executive Committee of the Electrical Trades Association, of San Francisco, vice R. W. Van Valkenburgh.

V. R. Lansingh sailed for Europe on Saturday, July 25th, to be gone for six weeks. He will spend the greater part of this time in studying recent European developments in the science of illumination and in going over the situation there as regards Holophane.

## TRADE CATALOGUES.

Weber sockets are illustrated and described in a leaflet from the Weber Electric Co., Henry D. Sears, general sales agent, 131 State Street, Boston, Mass.

Vol I, No. 1 of "Hot Points" is a unique publication from the Pacific Electric Heating Company, of Ontario, Cal., issued to familiarize central stations with their goods, particularly electric flat irons.

A lamp testing watt indicator, being marketed by the General Electric Company, Schenectady, N. Y., and designed to give a practical demonstration of the relative watt consumption of metallic and carbon filament lamps, is described in Bulletin No. 4609.

Bulletin No. 4600, recently issued by the General Electric Company, Schenectady, N. Y., describes various types of controllers for use in connection with both alternating and direct current motors, on electric cars, locomotives, automobiles, launches, elevators, trains, hoists, etc., and also in rolling mills, machine shops, printing plants and pumping stations.

The General Electric Company, Schenectady, N. Y., describes in bulletin No. 4603 an arc lamp specially suited to the illumination of mills and factories, where the vibration caused by machinery, and the variation in line voltage resulting from the use of motors for machine drive render the ordinary arc lamp unsatisfactory. The lamp described is of the multiple type, and is for use on 220-volt direct current circuit.

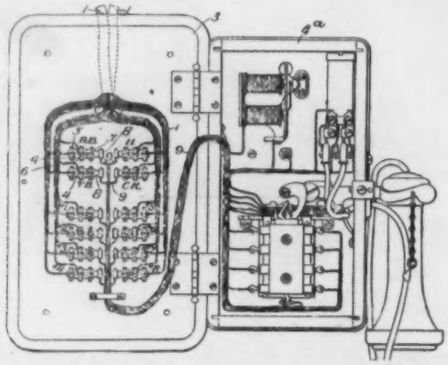
The Kellogg Switchboard & Supply Company have just issued their new bulletin describing in every detail their standard line of common battery apparatus. The bulletin is handsomely illustrated with large well finished half-tones. The "standard of excellence" Kellogg common battery wall telephones are described in full, with special descriptions of the new Kellogg "Short back-board" wall instruments, the new Kellogg "steel hotel set," and the new "indestructible desk stand," which is proving immensely popular.

The Kellogg Switchboard & Supply Company, Chicago, have recently issued a bulletin describing their railway dispatching system; also a bulletin describing the new Kellogg railway pole telephone, with supplements giving account of Kellogg railroad systems in successful operation. Some of the advantages of the Kellogg train dispatching systems are the safety, care and rapidity of train handling; the selective signalling of any or all stations and the services of telegraphers done away with. Experienced train men who have inspected the Kellogg railway pole telephone in actual service say that its reliability, simplicity and accurateness are its strongest features.

# PATENTS

INTERCOMMUNICATING TELEPHONES. 893,820. Henry C. Thomson, Boston, Mass., assignor to Electric Goods Manufacturing Company, Boston, Mass.

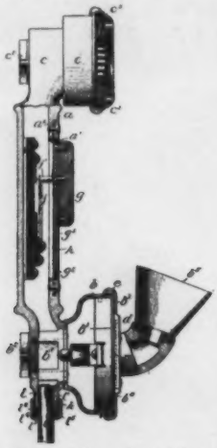
An intercommunicating telephone apparatus comprising a series of telephone boxes or casings, each containing switching and calling mechanism, a main conductor cable leading directly from box to box and containing station wires equal in number



to the number of stations, common return talking and ringing battery wires, metallic plates on the back-board of each box corresponding in number to the number of main conductor wires in the main cable, means for connecting the incoming and outgoing main cable wires to the respective plates and wires connecting the respective plates with the switching and calling mechanism.

HAND TELEPHONE SET. 893,891. George F. Atwood, East Orange, N. J., assignor to Western Electric Company, Chicago, Ill.

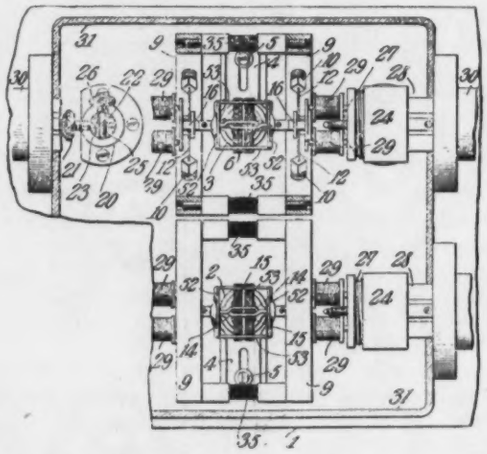
In a hand telephone set, the combination with a hollow handle, of a transmitter and receiver carried at the ends thereof, switch spring terminals within said handle, a depresser



bar in an opening in the handle adapted to operate said springs, a spring for restoring said bar, a plate supporting said depresser bar and restoring spring, the said opening being countersunk to provide a seat for said plate, said plate having an opening through which said depresser-bar projects and a waterproof lining interposed between said plate and its seat and covering the opening in the handle.

TELEPHONE RELAY. 893,953. Charles W. Underwood, Crowley, La.

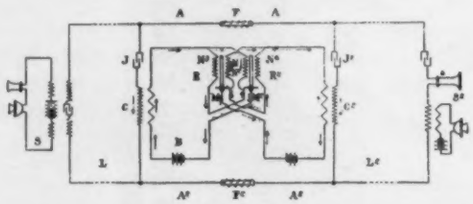
In a telephone relay, a telephone receiver magnet and coils, another telephone receiver magnet and coils, a support for each receiver magnet adjustable both longitudinally with relation to the length of the magnet and at right angles thereto, an armature for each receiver magnet, a support for each armature comprising a suitable frame, metal filaments supported by the frame and carrying said armature, means carried by the frame



and engaging the filaments for putting the latter under longitudinal strain, a telephonic transmitter, and connections between each armature and that side of the transmitter remote from the said armature.

TELEPHONE REPEATER SYSTEM. 894,170. Nathaniel G. Warth, Columbus, Ohio.

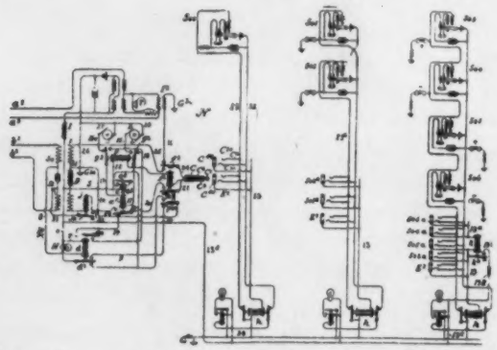
In a relay for telephone lines, two induction coils, two transmitting devices, magnetically controlled means operatively



connected therewith and two independent electro-magnetic means included in closed local circuits solely with the secondaries of said induction coils.

TELEPHONE SWITCHING AND SIGNALING APPARATUS. 893,414. James G. Wray, Chicago, Herbert T. Gardner, Maywood, and William G. Kinton, Chicago, Ill., assignors to American Telephone and Telegraph Company.

In a telephone signaling system for trunk lines, a signaling circuit, a relay having an armature included in said circuit, a circuit for said relay including the trunk lines, means at the



call-originating central station for operating said relay, a second circuit closer to close said circuit at another point, means located at the central station of the called substation for operating said second circuit closer, a circuit breaker for said circuit, and means located at the called sub-station for causing the operation of said circuit breaker.

# INDUSTRIAL

## SUCCESS CHEMICAL FIRE EXTINGUISHER.

The H. W. Johns-Manville Company, 100 William Street, New York, has recently put on the market the Success Portable Fire Extinguisher. It is made of extra heavy Lake Superior cold rolled copper, securely riveted and reinforced by heavy shoulders of solder, every one of which is tested to withstand a pressure of 350 lbs. to the square inch, or four times the required strength. The joint where the cover is attached is ordinarily the weakest part, but the method of attaching the dome to the body of the shell is said to make that joint the strongest part in this extinguisher. The large wheel at the top of the machine is a convenience in opening and closing it, at the same time serving as a base on which to rest it when reversed, as in use for playing on a fire. The frame work, or bottle holder, containing the supply of sulphuric acid, is cast brass and virtually indestructible. The bottle of standard size

and type for holding the acid is obtainable anywhere in case of accidental fracture from any cause. The hose, tested to 400 lbs. to the square inch, cannot be pulled off, and is only detachable with a wrench, being joined to the body by a swivel ground joint. The nozzle is said to be absolutely non-corrosive.

No mechanical force is needed to put the apparatus in action; it is simply turned bottom up, and the resultant mixture of sulphuric acid in the three gallons of water charged with bicarbonate of soda develops instantly force enough to throw a chemical stream 50 feet. This chemical stream acts as a blanket, and smothers fire which water cannot reach. By means of a lead stopper, fitting loosely, the flow of sulphuric acid is regulated and just the correct amount of gas generated at all times, making explosion impossible, the company states. As this extinguisher neutralizes the acid before it leaves the machine, the stream will not injure material with which it may come in contact. This extinguisher is included in the list of approved chemical extinguishers issued by the National Board of Fire Underwriters.

## NEW CONDUIT BOX.

The Chicago Fuse Wire & Manufacturing Co. is now placing on the market a new conduit box, No. 160, embodying the sectional gang idea employed in their well-known type "AA" and "BB" boxes for flexible conduit. A box for any number of gang switches can be built up from a two-gang box shown in Fig. 1, by loosening the screws and inserting spacers,

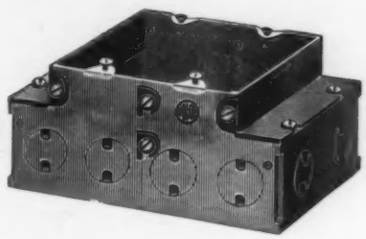


FIG. I.

the box and cover part of spacer being formed of one piece, the only detachable part on top being the small end cover plates which may be removed without taking out a screw, permitting ready access to the bushings of end conduits, also allowing examination of wires without disturbing switches.

Fig. 2 shows a three-gang box with spacer in place, the hook eye construction enabling these boxes to be assembled without removing a single screw, forming a perfectly tight box, meeting in every detail the requirements of underwriters, as well as filling a long felt want of electrical contractors for a

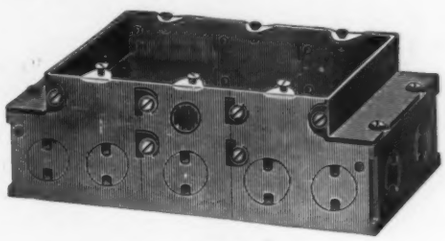


FIG. II.

sectional gang conduit box in which there is ample room for conduit connections, wire joints, etc., etc. This box makes an ideal junction box when equipped with a flat cover, and is particularly suitable as a cutout box, being designed to accommodate the single and double pole main line blocks and also several single and double branch cutouts manufactured by this company.

Each spacer is provided with two knockout plugs for ½-inch or ¾-inch conduit, as specified, while each box portion is equipped with six such openings. The spacings between switch lug centers are standard, so that all gang switch plates fit perfectly. The advantage of this construction over the single piece gang boxes must appeal at once to every user of conduit boxes, as it enables him to meet any demand for gang boxes with only a stock of two-gang boxes and spacers.

## LANGE AND LAMME PATENT VALID.

In the suit brought by the Westinghouse Electric & Manufacturing Co. against the Electric Controller & Supply Co. with regards to the infringement of the Lange & Lamme patent of a controller for regulating the power and speed of electric motors by the German patent, Judge R. W. Taylor, of the U. S. Circuit Court, has decided that the Lange & Lange patent is valid.

# NEWS NOTES

## TELEPHONE.

Vallejo.—The application of the Pacific States Telephone and Telegraph Company for a permit to build a large conduit on Marin Street and City Hall Alley has been granted on condition.

Eugene, Ore.—The county court has granted a telephone franchise to the Deadwood & Blachley Company to operate a telephone line between the two places bearing the appellations that comprise the name of the company.

Astoria, Ore.—A. J. Brunold, manager of the local telephone company, has received instructions from Superintendent Gilkyson, announcing that the management has completed plans for an entire change in the Astoria branch of the company, the work of remodeling to commence at once.

Snohomish, Wash.—The boycott on the Farmers' or Independent Telephone Company, which has been in force for several months past, is declared off and that company is again installing its phones in the business houses. The proposed new telephone company will probably not materialize.

Vancouver, Wash.—A franchise was passed which is a practical renewal of the old grant to the Washington Home Telephone Company. The franchise was granted in the name of Judge A. L. Miller, who, it is understood, represents a number of capitalists who will organize a company and install a telephone system.

Eugene, Ore.—J. E. Heaton, manager of the Pacific States Telephone Company for Lane County, was in the city recently making preparations for rebuilding the system at this place. Some lines have from eight to ten phones, and it is the intention of the company to string additional wires and reduce the number on each line to four. It is claimed that this change will result in much better service.

San Francisco.—The proposed action seeking to bring about a revocation of the Home Telephone Company's franchise on the ground of fraud and bribery was discussed by the public utilities committee of the Supervisors last Friday, and the matter will be brought up again this week. J. M. Agar is the petitioner asking for the recall of the franchise, and it is said that he represents men behind the Independent Telephone Company.

Lewiston, Ida.—Charles Ferris left recently for Orofino, where he will be engaged in the reconstruction of the Snyder telephone line from Pierce to Kendrick. The Snyder system maintains a central switchboard at Orofino, which will be materially improved by the installation of a metallic circuit system and the toll lines from Orofino to Pierce City and from Orofino to Kendrick will be thoroughly overhauled. It is expected the improvement work will require about two months.

San Francisco.—In his annual report to the fire commission last week, Chief Shaughnessy made a vigorous plea for an underground fire alarm system, and will address another communication to that body in the hope of securing action by the Supervisors. He states that last Monday night several houses were out of communication with the boxes for several hours on account of the crossing of a trolley wire. Appropriations have been made from time to time for an underground system, but so far little has been accomplished.

## TRANSMISSION.

Red Bluff.—B. Cussick, of Chico, has filed water claim on 8,000 inches of water in Deer Creek, to be diverted and used to generate electric power. W. C. Smith has also filed a claim for 8,000 inches of water in the same creek.

El Centro.—The Holton Power Company has signed a contract with Cincinnati and Milwaukee manufacturers of electrical and hydraulic machinery for equipment necessary to enlarge its power plant to a capacity of 1100 horsepower.

Ogden, Utah.—A survey for a pipe line and power house in South Fork canyon above the city selected by Ogden City has been completed by L. B. Spencer, who has interested some financiers with whose capital it is proposed to develop 1000 horsepower from the stream.

Placerville.—James O'Brien has filed on 5,000 inches of water of the main fork of Cosumnes River, to be conducted about six miles by ditch and pipe for power purposes. Louisa F. Scioroni has filed on 600 inches of water in Camp Creek, opposite Baltic Creek, for power purposes.

Oroville.—The Great Western Power Company has completed its line of towers from a point about half way between Big Bend and Oroville to Sacramento. The work is being rushed, as it is expected to reach San Francisco by October, when power is to be turned on at the plant. The company has installed an automatic arrangement whereby the power will be shut off at once if any break occurs on the line.

San Francisco.—The San Francisco office of the Westinghouse Electric and Manufacturing Company has taken a contract to supply a generator and auxiliary equipment for the Yosemite Dredging and Mining Company. This company had been figuring on securing power from the La Grange system for its gold dredges near Merced, but has decided to install a power plant of its own.

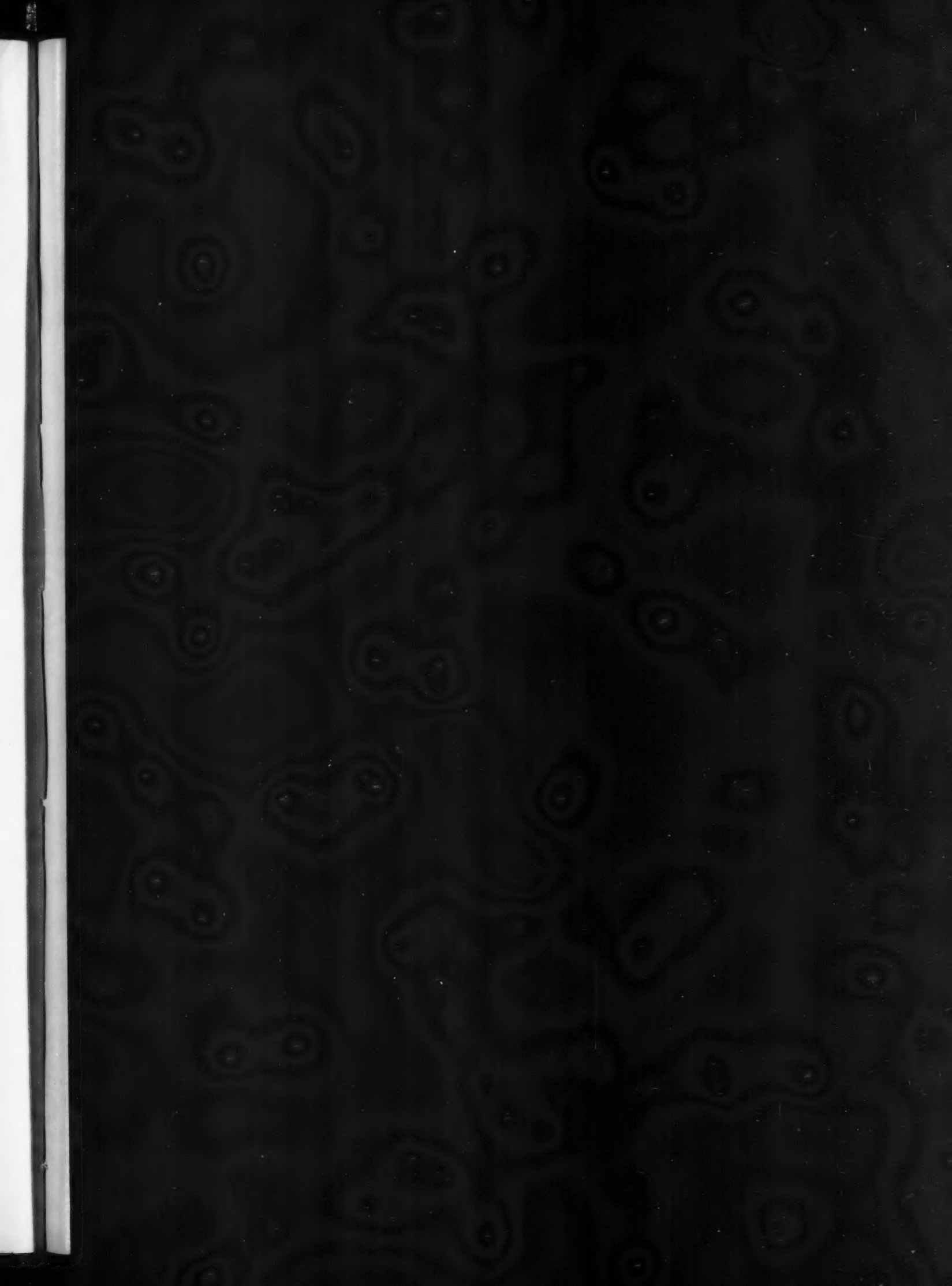
Marysville.—The Bay Counties Power Company has appealed to its patrons to economize on the electric current, fearing that the waters in the middle fork of the Yuba River, on which their Colgate plant depends for power, will not last through the summer months. At present the river is at the lowest stage known for years. The company figures that there is a great waste through the practice of allowing electric lamps to burn night and day.

## ILLUMINATION.

San Diego.—Ayers & Stevenson will soon start the manufacture of gas and electric fixtures at 627 Seventh Street.

San Jose.—The Supervisors have ordered the purchase of a 100-light gas generator at a cost of $400 for the use of the county hospital.

Upland.—The Supervisors have granted a franchise to lay pipes in the streets of the city for the purpose of carrying gas for lighting purposes to Robert Weiss.

Escondido.—The Escondido Mutual Water Company has signed an agreement for a municipal lighting and power plant to be installed and operated in connection with the water plant.

Eureka.—The new gas plant of the Humboldt Gas and Electric Company has just started operation. The plant is located at power station B on the west shore of Humboldt Bay. It is strictly modern in every detail and its capacity is sufficient to provide gas for a town much larger than Eureka.